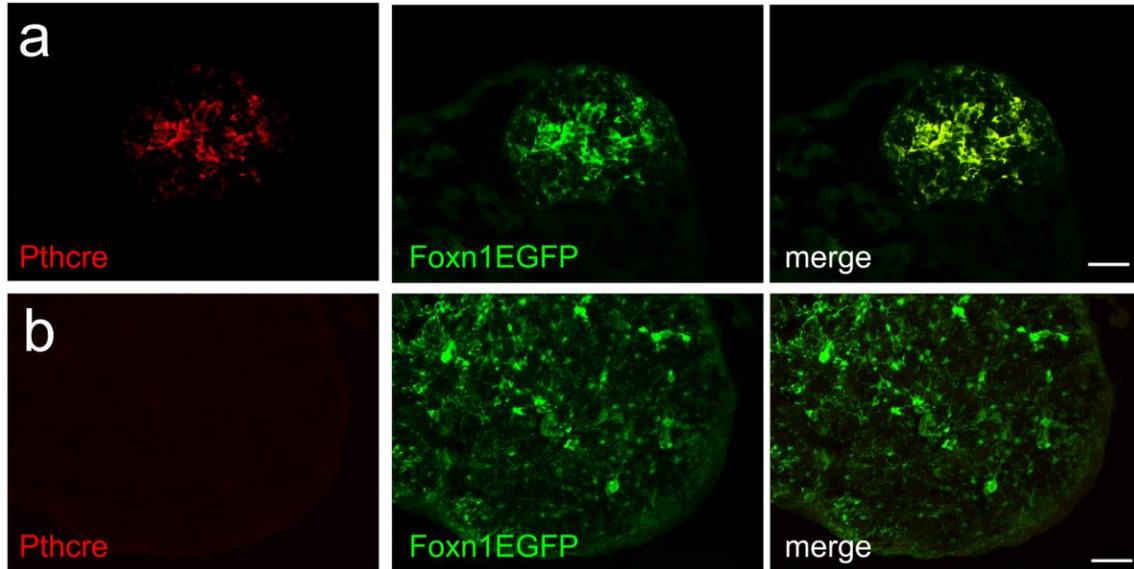


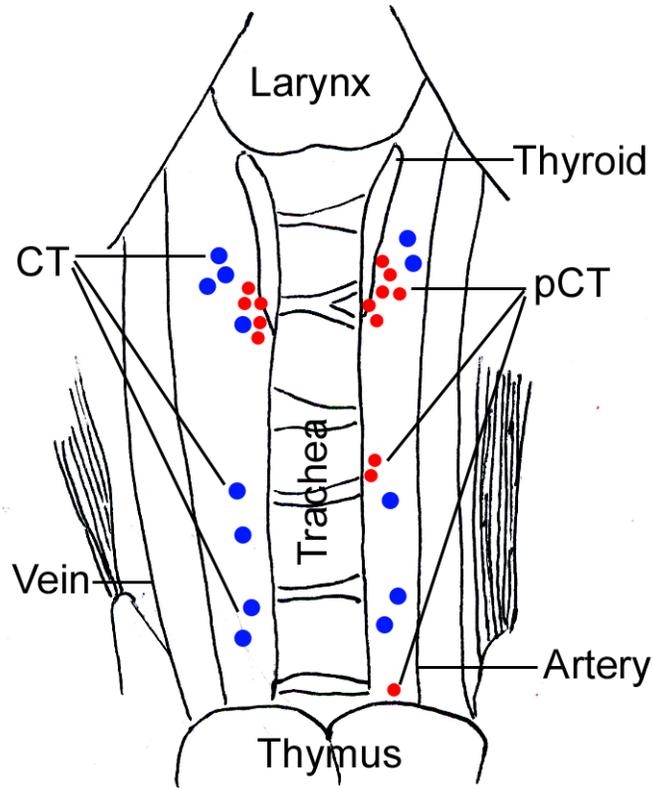
**Supplementary Figure S1: Pth<sup>+</sup> cells could not be detected in the thymus from Pthcre<sup>+</sup>;td-Tomato;Foxn1EGFP mice.**

GFP is shown in green, which represents Foxn1 expressing cells. (Scale bar=50 $\mu$ m)



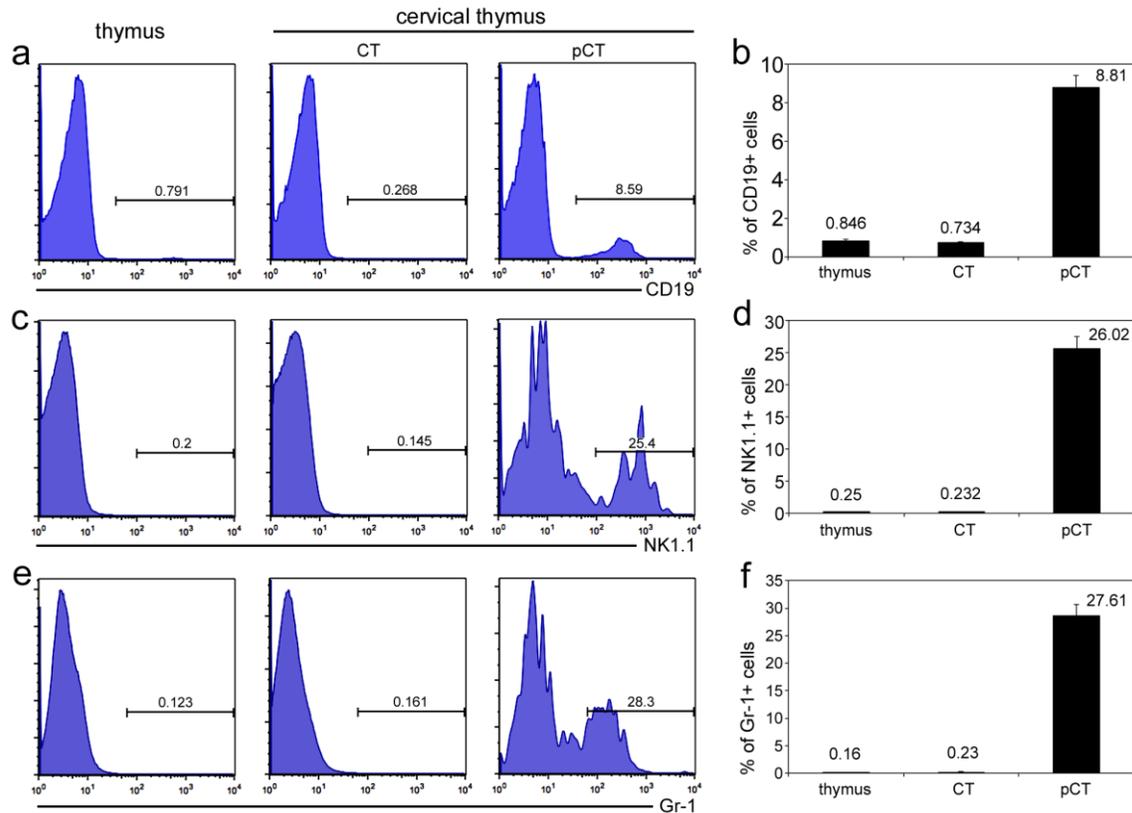
**Supplementary Figure S2: Parathyroid origin of cervical thymi.**

Sections of cervical thymi from 3 day old Pthcre;CAG-td-Tomato;Foxn1::EGPF mice. **(a)** with green and red, indicating parathyroid origin; **(b)** with green only, indicating non-parathyroid origin. (Scale bar=50 $\mu$ m).



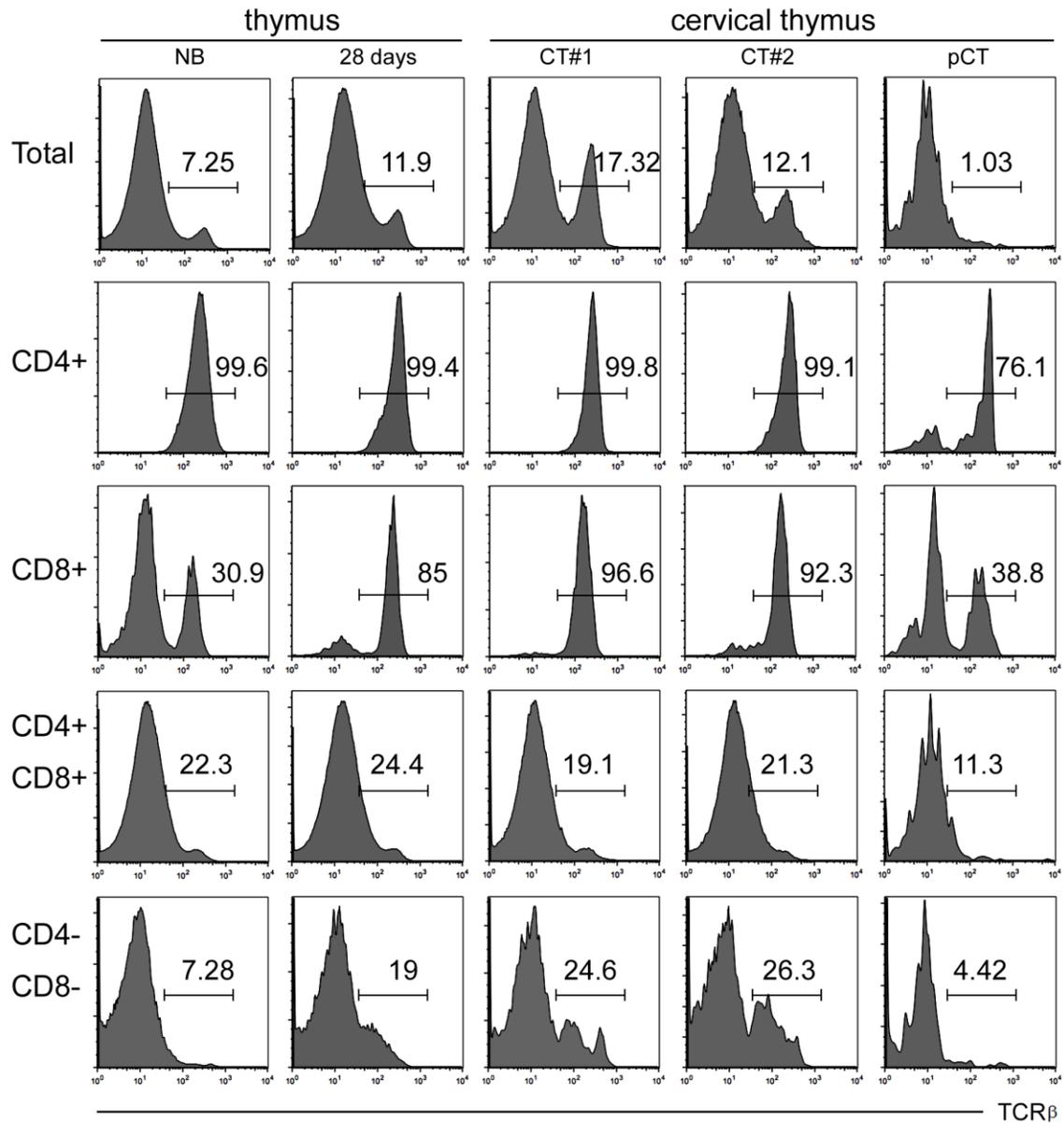
**Supplementary Figure S3: Localization of Parathyroid derived and non-Parathyroid derived cervical thymus.**

Parathyroid-derived cervical thymi (pCT) are shown in red, non-parathyroid-derived in blue. Data are accumulated from dissections of multiple perinatal mice, aged P0-P5.



**Supplementary Figure S4: Increased B, NK and myeloid cells in Parathyroid-derived cervical thymus.**

(a) Flow cytometric analysis of thoracic and cervical thymus at postnatal day 3 for CD19 shows changes in the frequency of thymocyte subsets in cervical thymi (N>3). (b) CD19+ cells are dramatic increased in pCT compared to CT and thoracic thymus. (N>3, Error bars represent SEM. T-test, P<0.001) (c) pCT shows increased percentage of NK1.1+ cells. (d) Nk1.1+ cells are more than 100 fold increased in pCT compared to that in thoracic thymus and CT. (N>3, Error bars represent SEM. T-test, P<0.001) (e) Increased Gr-1+ cells are detected in pCT. (f) Compared to the very low incidence of Gr-1+ cells in thoracic thymus and CT, there is a 100 fold increase in percentage in pCT. (N>3, Error bars represent SEM. T-test, P<0.001)



**Supplementary Figure S5: TCR $\beta$  expression in cervical thymus.**

Flow cytometric analysis of thoracic and cervical thymus at postnatal day 3 for CD4, CD8 and TCR $\beta$  shows the frequency and level of TCR $\beta$  expression in thymocyte subsets in cervical thymi (N>3).